(51) International Patent Classification⁷: H04L 12/16, G06F 17/30

(21) International Application Number: PCT/SE00/02519

(22) International Filing Date:
12 December 2000 (12.12.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
9904540-3   13 December 1999 (13.12.1999)   SE

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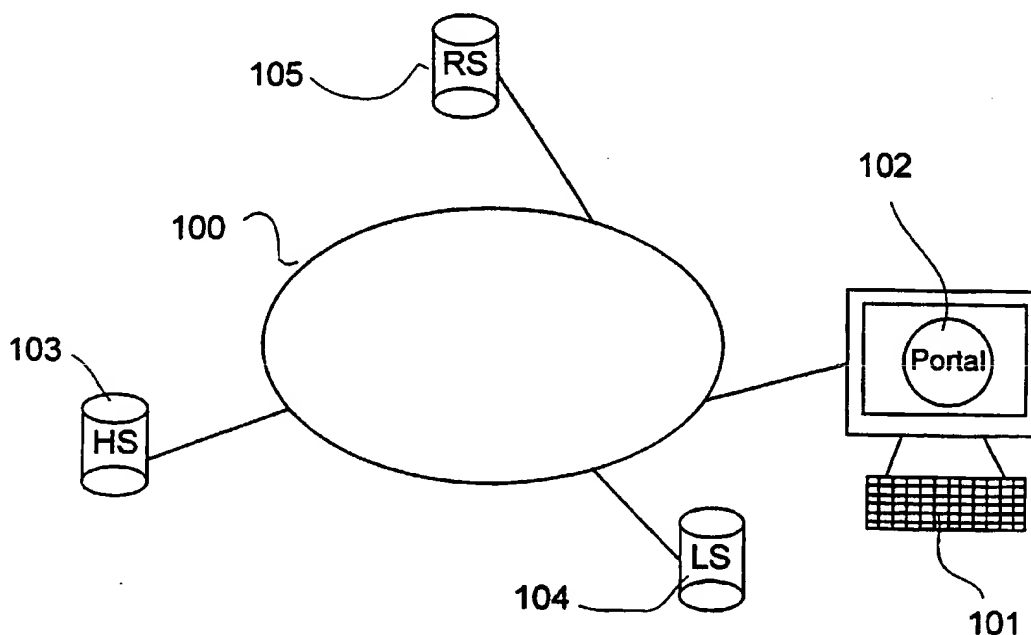
(81) Designated States (national): EE, LT, LV, NO.

(84) Designated States (regional): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).

Published:
— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PROCEDURE AND SYSTEM FOR CONTROL OF SERVICES IN A DATA COMMUNICATION NETWORK

(57) Abstract: A network portal has a so called "roaming function" which identifies the place where the user is and loads home local information adapted to the user's profile of interest. This means that when log-in is made in another place than where the home server is, the portal is adapted to the at present current local network.

PROCEDURE AND SYSTEM FOR CONTROL OF SERVICES IN A DATA COMMUNICATION NETWORK

TECHNICAL FIELD

5   The present invention relates to a procedure and a system for control of and provision of services to users of terminals connected to data communication networks.

BACKGROUND

10   In the future it will be possible for a lot of people to, by means of their personal computers and different types of portable terminals, set up connections to a local broadband network, for instance a city network.

15   The users frequently get into contact with resources in such networks via so called portals. Portals can be regarded as user interfaces which direct and refer to different services in servers which are on local networks and other, larger networks, and which can be used by the
20   persons who have Internet subscriptions at an Internet operator.

Today it is a problem to automatically adapt and add services in en existing portal for the geographical
25   location where a user is. At set up of connection in another city/local network than the one that is normally used, for instance from the home, there today do not exist any mechanisms to automatically offer the same broadband services from the at the time being nearest local server,
30   as those from the home server in the home network.

DESCRITPTION OF THE INVENTION
One aim of the present invention is to meet above indicated problem. This is achieved according to a method as claimed
35   in patent claim 1, and a system as claimed in patent claim 11.

A broadband local network in each community/city and a
network with nation-wide coverage is utilized. The portal
has a so called "roaming function" which identifies the
place where the user is and loads home local information

5   adapted to the user's profile of interest. This means that
when login is made in another locality than where the home
server is, the portal is adapted to the at the time being
current local network.
Information specific for the locality then automatically

10 turns up in the portal from a local server. This means, for
instance, that a virtual "video shop" which is located on a
server at the locality where login last was made, is
exchanged for a video shop which is located on the local
network where the new login has been made. The user can in

15 the example then benefit in full from being connected on a
broadband local network. In the same way all for the
locality specific information is updated in the portal. It
means a big advantage to the user if he/she has a portal
which in this way is upgraded automatically with

20 information related to the locality.
To the user this means that as long as he/she utilizes
material which is on the broadband local network,
irrespective of where he/she is, the waiting time and the
delays which otherwise are innumerable at "surfing" on the

25 Internet are avoided. The user still has access to the home
network and his/her home server.
In those cases where the terminal is of mobile type, the
base stations shall, at handover of terminals, also check
if the terminal is moving from a local network to another.

30 If that is the case, the portal shall, in the same way as
for a stationary terminal, be modified and adapted to the
new local network.

The added value of having a "roaming" portal and a thorough
35 service offer on the local network servers result in, as a
consequence, that for instance network providers have

greater possibility to establish connections with and keep customers, content providers and other Internet participants.

BRIEF DESCRIPTION OF THE FIGURES
Figure 1 shows a schematic illustration of a system according to the present invention.
Figure 2 shows schematically an illustration of a service portal.
Figure 3 shows schematically an illustration of a change of a service portal at roaming.

PREFERRED EMBODIMENTS
A system in which the present invention with advantage is implemented is shown in Figure 1. To a network 100 is connected a number of units of which only four are shown. It is well within the knowledge of the expert that a network of this type can include generally speaking an unlimited number of units. The units communicate, for instance, by means of known and standardized technology according to the IP-protocol.
To the network 100 is connected a user terminal 101 on the screen of which is illustrated in a very schematic way a portal 102. The showing of the portal 102 is preferably made by means of known software technique as, for instance, WebCrawler. Further, a number of servers are connected: A home server 103, a local server 104 and a roaming server 105, which all include functions that will be discussed in more details below.

The Portal
The portal 102 is a user interface towards the servers which are on the network 100, and which can be used by the users who, for instance, holds Internet subscriptions at Internet providers.

The portal, in the following called MyLocalPortal, and which is shown schematically in Figure 2, might look like and function according to the following:

5   MyLocalPortal consists of a number of optional services as, for instance, MyCity 201, MyHome 202, MyLeisureTime 203, MyFriends/MyFamily 204, MyCar 206, MyWork 207, which are strongly focused on a certain field. Besides there are services as well which can supplement the others, for
10   instance MyServices 205 and MyNews 208 connected to respective focus field. PLING 209 illustrates a notification about an event the user is to watch.

An adaptation to the information profile, the personal
15   portal profile, which the user has selected is also made, he/she can for instance have selected to filter away all sport information, that he/she only wants 8 "pie chart pieces" in the portal, that the "Pling" shall only twinkle and not sound, etc.
20

Roaming

Roaming is illustrated in Figure 3. Roaming causes that the portal 102 adapts to and is updated with information for the local network or the place/locality where login has
25   been made, however with regard to what the user has determined in his/her personal portal profile. The adaptation is also based on the quality of the connection of the terminal to the network 100.
This means that certain services in the portal will be
30   added/removed, others are changed regarding the content. This means that, irrespective of where the customer connects, he/she will automatically have access to the broadband services which are there, for instance video and music. In addition he/she will have local information about
35   current locality or city without need to search. The services which are of more personal kind are of course

included as they are, for instance such services as
calendar and address book.

Figure 3 illustrates schematically that the updating is
made only for the relevant parts of the portal. MyCity 201
is replaced by MyCity-information 308 of the new place, and
in the same way for the services MyHome 202, 309,
MyLeisureTime 203, 305, MyCar 206, 306 and MyNews 208, 307.

The updating of the portal will be rapid because no big
amount of data is transmitted to the terminal application
when the portal is updated, but only web links, network
references and meta information about the information
content of the local server. This in its turn results in
that the terminal application itself can filter away, in
addition to what the personal portal profile already has
filtered, links which it cannot handle, for instance video
flows with too large bandwidth or, in the case WAP, only
the WAP-adapted services that are to be derived, are shown.

The selection of which server that shall be appointed to be
local server 104 is made in a roaming server 105 on basis
of IP-number, mobile base station identity or calling
subscriber number. The roaming server 105 uses databases
which map said identities for terminals, home servers 103,
local servers 104, OLL-boxes, GSM/UMTS base stations, etc.
to geographical position.

The terminal application also can, if it has connection to
any other positioning system, for instance GPS, GSM-
positioning, user-input position etc, transfer this to the
roaming server.

The case user - stationary terminal

The scenario is that a user wants to get access to his/her
portal from a stationary terminal 101 in, for instance, a
library, in a provision-shop or at a place of work. The
user clicks on an icon/button, MyPortal. An HTTP-call is
directed to a central roaming server 105 in the network
after approved authentication, for instance via traditional
input of user name and password, or use of a new technique
such as smart card, fingerprints etc. The roaming server
105 gives an HTTP-response to the application with
references to the local server 104 and the home server 103.

The mapping towards which server that shall be appointed to
be local server 104 is made in the roaming server 105, on
basis of the IP-number of the stationary terminal 101. In
the database of the roaming server, there are IP-numbers
for clients, home servers and local servers related to
geographical position.

The portal application then derives both the user´s
locality profile for the home locality and personal portal
profile from the home server. From the local server is
derived the for the current locality specific locality
profile (unfiltered with regard to personal portal
profile). The application then compares the two locality
profiles and filters the content on basis of the personal
portal profile. The user portal is presented, finally,
updated with the services and the offer which is on the
local server 104 on the locality where the user is.
If the roaming server 105 does not succeed in locating via
the IP-number database, the application in a dialog square
asks the user to indicate where he/she is at present. In a
roaming database this information is stored in order to
provide suitable suggestions for locality for other users
who connect from the same network. By that, the knowledge
of the roaming database is successively improved about

(probable) localities for different IP subnetworks. In other respects this means no difference compared with the scenario above.

The case user – semi-stationary terminal

The scenario is that a user wants to get access to his/her portal from a semi-stationary terminal 101, for instance a portable computer which for the time being is connected by Ethernet on a place of work. The scenario reminds a lot of the case user – stationary terminal which has been described above. In this case the user gets access to a temporary IP-number from an IP-number pool in the company network where he/she is. The allocation of IP-numbers is made either manually or via any automatic protocol, for instance DHCP, Dynamic Host Configuration Protocol. The mapping towards which server that shall be appointed to be local server 104 then is made in the same way as above with regard to the database in the roaming server 105, on basis of the IP-number of the company network.

Authentication, deriving of home locality profile and personal portal profile, updating with information from the local server 104, etc is after that made as in the case user – stationary terminal described above.

The case user – called circuit connection

The scenario is that a user wants to get access to his/her portal with a called circuit connection to the network. In the network the calling modems are connected to a so called OLL-box which handles login and debiting. The OLL-box even today controls calling subscriber numbers (A-numbers). To make the roaming function functioning, the OLL-box is updated so that it also listens to HTTP-calls. One solution to make the OLL-box listen to and filter HTTP-traffic is so called transparent proxy.

If a call coming in to www.myportal.se (which is going to the roaming server 105), the "OLL-box" adds the subscriber

number in the call. For instance http://www-myportal.se can
with addition be http://www-myportal.se?subscribernumber
=####-#####, where the #-symbols represent the digits in a
telephone number. The roaming server 105 then maps the
subscriber number towards geographical location and
determines local server 104.

Authentication, deriving of home locality profile and
personal portal profile, updating with information from the
local server 104 etc, is after that made in the same way as
in the case user - stationary terminal which has been
discussed above.

The case user - mobile terminal

The scenario is that a user wants to get access to his/her
portal from a mobile terminal, for instance GSM or, in the
future, for instance UMTS. In this case the position of the
mobile is known by the roaming server 105 by the data which
exist about base station location. At handover in the
mobile system (not shown in the figures) the roaming server
105 is updated with the new position for base station in
question.

The OLL-box checks, as has been mentioned, already today
calling subscriber numbers. In the same way as in the
previous case, the OLL-box shall add the subscriber number
in the HTTP-calls to www.myportal.se which it has been
updated to listen to.

If the OLL-box can be updated so that it also gets
information about base station ID of the base station to
which the mobile is connected, also this identity is added
in the HTTP-call. If the OLL-box cannot get base station
ID, the roaming server 105 uses the subscriber number to
make an enquiry to the traffic management database of the
GSM/UMTS-system and by that get knowledge of the
geographical position of the mobile.

If more exact location is wanted than only with which base
station the mobile has contact, this can be achieved by,

for instance, GSM-positioning or via GPS. Authentication, deriving of home locality profile and personal portal profile, updating with information from the local server 104, etc, is after that made in the same way as in the case
5   user - stationary terminal described above.

Description of the services

Below are described examples of what the different services in the portal may contain. A lot of the examples of new
10   services which are presented are based on that the portal also is possible to use at a mobile terminal. At present, WAP-terminals, alternatively PDAs, are probable candidates for this application. New technology, UMTS in the first place, combined with new terminals will make possible the
15   ideas which are described below in a not too far distant future.

"PLING" means that a sound is heard and/or a twinkling lamp is lighted in the middle of the portal which informs about
20   that something has happened, for instance that the user has got a mail, somebody is searching for him/her, or a notification of an event the user has asked to be watched.

There also should be possibility for the user to in a
25   simple way himself/herself adapt his/her portal, for instance to add new services and to select a personal style in form of colors or background patterns.

MyHome
30   Under the service MyHome there may be functions for control and supervision, for instance video supervision of the home. It should be possible to switch on the sauna when traveling home, increase the heating of the home, switch on and switch off lamps, surveil one's home by video cameras
35   and sensors which detect changes etc. Different types of

alarm functions should be included for both internal and external damage, i.e. burglary and water leaks.

MyCity
The service MyCity contains information and offers from the municipality and the local trade and industry. In addition different types of services can be offered which can be used in a simple way in the geographical neighborhood where the user is just at the time being.

MyLeisureTime
The pie chart piece "MyLeisureTime" can contain for instance music, video and multi-user games within a city/district which can be regarded as a hybrid between the real and the virtual world. The user shall have possibility to get game information (for instance clues, information) to a mobile terminal depending on where in the physical reality he/she is, i.e. a virtual information layer is laid on top of the physical reality of the game.

The local operator's broadband network makes it possible to get very high quality of the material that is transferred, when it is distributed within the geographical vicinity, for instance a city.

MyWork
Under the service MyWork there are services which makes it easy for the user always to get access to documents, e-mail, fax, messages, calendar and have possibility to get notifications/reminders. The user shall in this way be able to in an easy way work from home. The user shall have possibility to, in a simple way, see which of his/her workmates that are online (ICQ-similar), have possibility to, in a simple way, set up video conferences with those at home, and share virtual work surfaces.

MyCar

Under the service MyCar there are among other things different types of control functions. One example is that the user shall able to remotely start engine heater or timer for engine heater.

MyFriends/MyFamily

Under the service MyFriends/MyFamily is located all addresses, telephone numbers, fax numbers, E-mail addresses etc that the user needs. Functions such as group-pling, i.e. a question is transmitted to a plurality of persons shall exist, and the possibility to rapidly set up video conferences.

MyNews

Under the pie chart piece "MyNews" the user shall have access to TV, radio, the newspaper and other news that shall be watched. The user shall have possibility to study the news whenever he/she wants. He/she also shall have access to an archive with news that can be searched from, for instance, local TV and radio, i.e. the user shall be able to search among both video, radio and text material. It shall be possible for the user to get access to this both when he/she is out traveling, and when he/she is at home.

MyOtherServices

MyOtherServices includes all other types of services the user can get access to via his/her portal. MyMoney gives the user on the one hand possibility to mobile shopping, on the other to pay for different types of services he/she utilizes as, for instance, VoD and music. The local bank office can in a simple way be accessed from the portal. MyPersonalStoringPlace where the user shall have possibility to store his/her photographs, videos etc, and in a simple way have possibility to access and show,

independent of place and terminal. Under MyOtherServices a user also can select to get tailored offers, MyOffers, from businessmen and advertisers.

PATENT CLAIMS

1. Procedure for control of provision of services in a data
communication network where a user changes from utilizing a
first data communication network connection to utilizing a
second data communication network connection, at which a
first set of to the user accessible services associated
with the first data communication network connection is
replaced by a second set of to the user accessible services
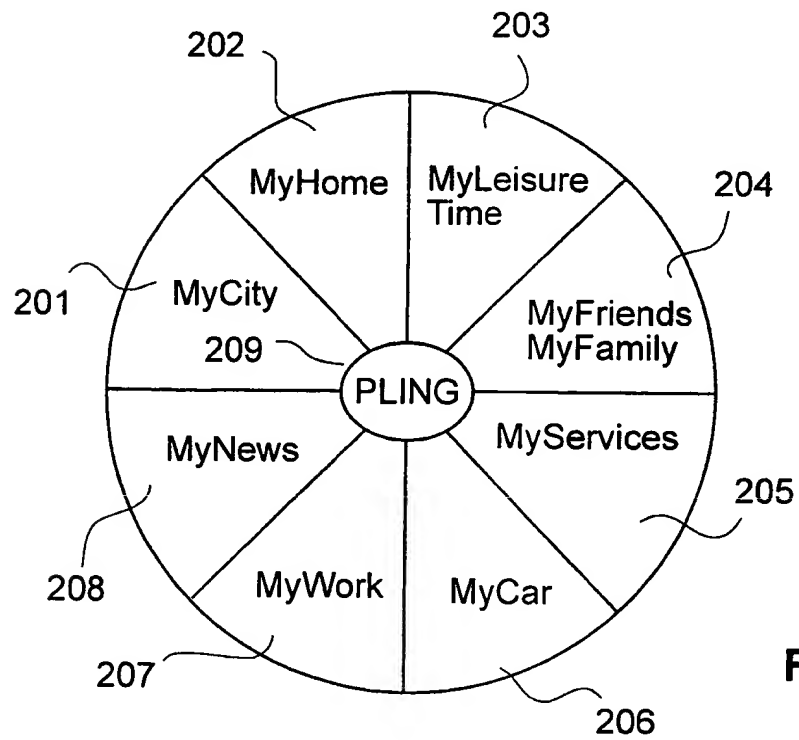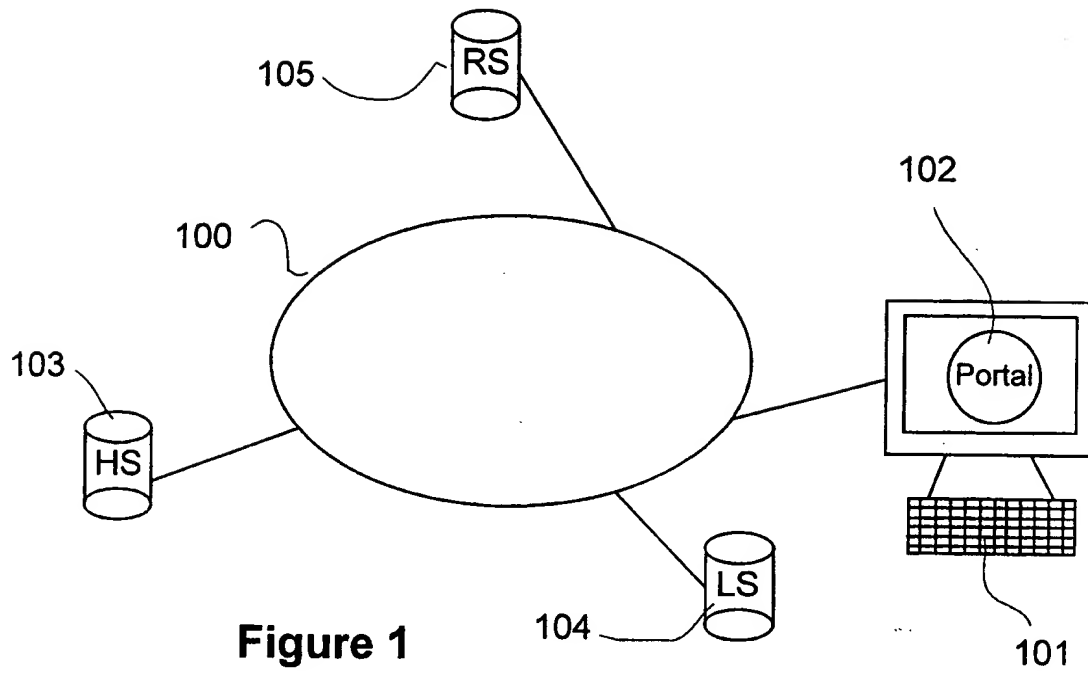associated with the second data communication network
connection.

2. Procedure as claimed in patent claim 1, where the
replacement of the set of services includes to change a
portal profile associated with the user.

3. Procedure as claimed in patent claim 1 or 2, at which
the replacement is made depending on which type of
equipment that the user connects to the network.

4. Procedure as claimed in patent claim 1 or patent claim
2, at which the replacement is made depending on the
geographical location of the connection points.

5. Procedure as claimed in patent claim 4, at which the
geographical location is determined by means of a network
address.

6. Procedure as claimed in patent claim 4, at which the
geographical location is determined by means of a telephone
number.

7. Procedure as claimed in patent claim 4, at which the
geographical location is determined by means of a base
station identity in a mobile telephone system connected to
the network.

8. Procedure as claimed in patent claim 1 or 2, at which the replacement is made depending on the capacity of the connection point.

9. Procedure as claimed in patent claim 8, at which the capacity is determined by means of measuring.

10. Procedure as claimed in patent claim 8, at which the capacity is determined by means of available information about the connection point.

11. System for control of provision of services in a data communication network where a user changes from utilizing a first data communication network connection to utilizing a second data communication network connection, including devices for replacing a first set of to the user accessible services associated with the first data communication network connection with a second set of to the user accessible services associated with the second data communication network connection.

12. System as claimed in patent claim 11, at which the devices for replacement includes devices to determine which type of equipment the user connects to the network.

13. System as claimed in patent claim 11, at which the devices for replacement includes devices to determine the geographical location of the connection points.

14. System as claimed in patent claim 13, at which the devices to determine the geographical location include devices to determine a network address.

15. System as claimed in patent claim 13, at which the devices to determine the geographical location include devices to determine a telephone number.

16. System as claimed in patent claim 13, at which the devices to determine the geographical location include devices to determine a base station identity in a mobile telephone system connected to the network.
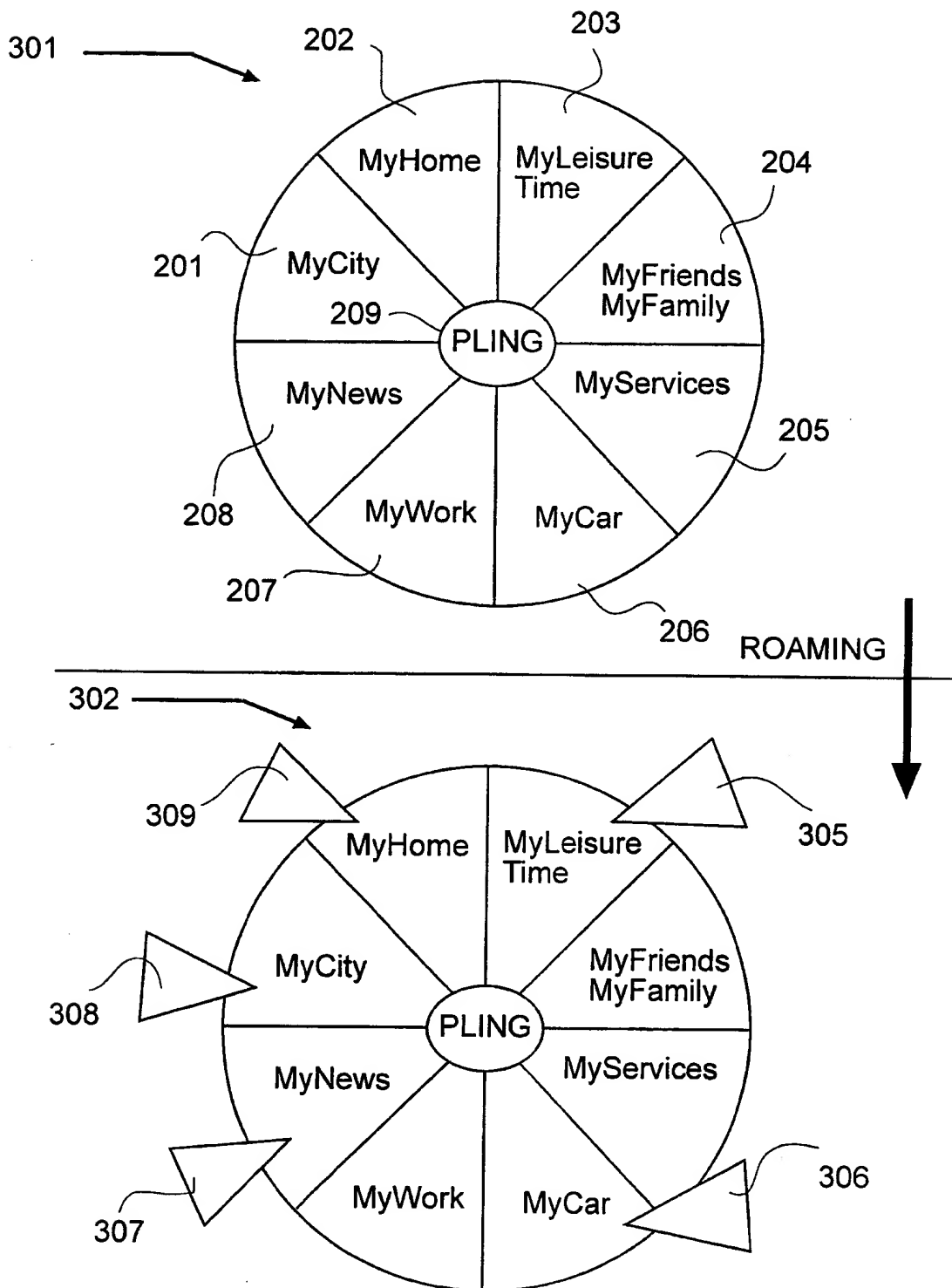
Figure 1

Figure 2

301 →   202   203

MyHome | MyLeisure Time

204

201   MyCity

209   PLING   MyFriends MyFamily

MyNews   MyServices

205

208   MyWork   MyCar

207   206   ROAMING

302 →

309   MyHome | MyLeisure Time   305

MyCity   MyFriends MyFamily

308   PLING

MyNews   MyServices

MyWork   MyCar   306

307

Figure 3

1

	International application No.
	PCT/SE 00/02519

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04L 12/16, G06F 17/30
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G06F, H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	Further documents are listed in the continuation of Box C.		X	See patent family annex.

Date of the actual completion of the international search	Date of mailing of the international search report
23 February 2001	23 MAR 2001
Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

C (Continuation).   DOCUMENTS CONSIDERED TO BE RELEVANT

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X	WO 9847295 A1 (BRITISH TELECOMMUNICATION PUBLIC LIMITED COMPANY), 22 October 1998 (22.10.98), page 9, line 20 - page 10, line 18, abstract --	1,4,5-7,11, 13-16
X	IEICE Transactions on Communication, Vol E80-B, no 10, Oktober 1997,N.FUJINO et al, "Mobile Information Service Based on Multi-Agent Architecture", s 1401-1405 -- ---------	1,4,7,11,13, 16

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Information on patent family members

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				GB	9707615	D	00/00/00

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